ST 02-0018-GIL 01/22/2002 MANUFACTURING MACHINERY AND EQUIPMENT

Exempt manufacturing equipment can include chemicals that effect a direct and immediate change upon a product being manufactured for sale or lease. See 86 Ill. Adm. Code 130.330(c)(6). (This is a GIL).

January 22, 2002

Dear Xxxxx:

This letter is in response to your letter dated October 25, 2001. The nature of your letter and the information you have provided require that we respond with a General Information Letter, which is designed to provide general information, is not a statement of Department policy and is not binding on the Department. See 2 Ill. Adm. Code 1200.120(b) and (c), which can be accessed at http://www.revenue.state.il.us/legalinformation/regs/part1200.

In your letter, you have stated and made inquiry as follows:

The purpose of this letter is to request a General Information Letter pursuant to 2 Ill. Admin. Code 1200.120 regarding the Illinois sales and use tax consequences of chemicals used in a manufacturing process.

To the extent this information letter is to be provided to the public for viewing, we respectfully request for business confidentiality purposes that the information contained in the two appendices section be removed from publication. If the Department is unable to address this request with the appendices remaining unpublished, please contact us before taking any action with regards to this letter.

FACTS

Introduction

Client is a producer and manufacturer of products that are refined from corn. The products Client manufactures include animal feed, gluten meal, oil, starches, and sweeteners from starches. The manufacturing process by which the starch is separated from the corn is known as the wet milling process. The corn wet milling process separates corn into its four basic components: starch, germ, fiber and protein.

There are five basic steps to the wet milling process. First, the incoming corn is inspected and cleaned. Then it is steeped for 30 to 40 hours. The next step in the process involves a coarse grind to separate the germ from the rest of the kernel. The remaining slurry consisting of fiber, starch and protein is finely ground and screened to

separate the fiber from the starch and protein. The starch is then separated from the gluten in the remaining slurry and washed.

After the wet milling process is complete, the starch can be modified and dried, or is further refined into syrups in the Client's dry starch and refinery processes.

Finally, Client extracts the oil from the germ, and produces animal feeds with the remaining fractions of the corn.

Client uses a variety of chemicals in its processes. The different chemicals have a variety of uses. Some become ingredients of end product while others are used for pollution control. Many are used as catalysts for breaking down the components of corn, for modifying the starch, and for removing impurities from the syrups. 'These chemicals may be regenerated and reused until they are fully exhausted. Further, many of the chemicals are used as an alternative to tangible machinery or equipment.

The following steps describe the wet milling process and associated processes to manufacture animal feeds and to recover the oil.

Step 1: Inspection and Cleaning

The incoming corn shipments are inspected and the corn is cleaned to remove cob, dust, chaff and foreign materials before steeping begins.

Step* 2: *The Steeping Process

The corn is moved to large stainless steel vats for the steeping process. During steeping, the kernels absorb water, increasing their moisture levels from 15 percent to 45 percent. The addition of sulfur dioxide to the water prevents excessive bacterial growth in the warm environment. As the corn swells and softens, the sulfur dioxide loosens the gluten bonds within the corn and releases the starch.

Step* 3: *Germ Separation - Coarse Grind

After steeping, the corn is coarsely ground to break the germ loose from other components. The ground corn, in a water slurry, flows to the germ separators.

Cyclone separators spin the low-density corn germ out of the slurry. The germs, containing about 85% of the corn's oil, are pumped onto screens and washed repeatedly to remove any starch left in the mixture. A pressing and solvent extraction process recovers the oil from the germ. The oil is then refined and filtered into finished corn oil. The germ residue (spent flake) becomes a component of animal feeds.

Step* 4: *Screening and Fine Grinding

The corn water slurry leaves the germ separator for a second, more thorough, grinding in an impact or attrition-impact mill. This grinding releases the starch and gluten from the fiber in the kernel. The suspension of starch, gluten and fiber flows over fixed concave screens that catch fiber but allow starch and gluten to pass through. The fiber is collected, slurried and screened again to reclaim any residual starch or protein, then

piped to the feed house where it is dried and incorporated as an ingredient into animal feeds. The starch-gluten suspension, called mill starch, is piped to the starch separators.

Step* 5: *Starch Separation

Gluten has a low density compared to starch. By passing mill starch through a centrifuge, the gluten is readily spun out and dried for use in animal feeds. The starch, with just one or two percent protein remaining, is diluted, washed to remove the last trace of protein and produce high quality starch, typically more than 99.0 percent pure. Some of the starch is dried and marketed as unmodified corn starch, some is modified into specialty starches, and the remainder is converted into corn syrups and dextrose.

Syrup Conversion

Starch, suspended in water, is liquefied in the presence of acid and/or enzymes, which convert the starch to a low-dextrose solution. Treatment with another enzyme can continue the conversion process. Throughout the process, refiners can halt acid or enzyme actions at key points to produce the right mixture of sugars like dextrose and maltose for syrups to meet different needs.

In some syrups, the conversion of starch to sugars is halted at an early stage to produce low-to-medium sweetness syrups. In others, the conversion is allowed to proceed until the syrup is nearly all dextrose.

The syrups are refined via filtration, carbon absorption, and ion exchange. Excess water is evaporated. Syrups are sold directly, crystallized into pure dextrose, or processed further to create high fructose corn syrup.

In the refinery, soda ash, caustic, and muriatic and sulfuric acids are added to the process stream as required to meet the requirements of each processing step.

Once some of the processing steps are completed, the enzymes and these chemicals must be removed because they would otherwise give the syrup undesirable taste, odors, and color. These chemicals have become ‘impurities' and are largely removed during the ion exchange refining steps.

Ion exchange resins and chemicals used to regenerate the resins (which account for most of the acid, caustic and ammonia) are all working together, and each is essential to the manufacturing process.

Regenerated resins treat the syrup until they become loaded with the impurities. The columns containing the resin are taken off line and the resins are regenerated in place, and the impurities are removed from the resin and the effluent goes to waste treatment. This is referred to as a batch process.

The resins and these chemicals are essential to the manufacturing process, the acid and caustic are parts of this refining equipment that require periodic replacement in the course of normal operation.

Products Resulting from Client's Wet Milling Process

The products resulting from the wet milling of corn range in applications and usefulness. These products include unmodified starch, modified starch, dextrin, maltodextrin, glucose/corn syrup, crystalline dextrose, dextrose and high fructose corn syrup, corn oil, corn gluten feed, corn gluten meal, germ meal/germ and steep water.

The products listed above can also be used in the further processing or sweetening of soft drinks, building material, cereals, chemicals, condiments, confectioneries, oils, formulated dairy products, ice cream, jams and jellies, meat products, paper and corrugated boxes, adhesives, syrups, textiles, wines and brewing.

LAW

Taxation of Tangible Personal Property Generally

Illinois imposes a sales and use tax on the sale or use of tangible personal property within the state of Illinois. These taxes are referred to as the Retailers' Occupation Tax (ROT) and the Use Tax (UT). The ROT applies to persons engaged in the business of selling at retail tangible personal property.[1] The UT applies to the privilege of using in Illinois tangible personal property purchased at retail from a retailer.[2]

In other words, the purchase of tangible personal property for the purpose of use or consumption within the State of Illinois is subject to sales or use tax (ROT and UT) unless the sale is not at retail or a specific exemption applies to the transaction.

Resale Exemption

Sa/e for Resale Generally

Illinois law provides that taxable sales at retail do not include items purchased for the purpose of resale to the extent that such property is not first subject to a use for which it was purchased. To the extent that such property was first subject to a use for which it was purchased, thc property is still deemed to be purchased for resale when it is resold as *an ingredient of an intentionally produced product of manufacturing.*[3]

The sale for resale exemption applies to Client in two situations. The first is when an item of tangible personal property is purchased and included within a final product as an ingredient.[4] For example, Client purchases chemicals that are necessary and desired elements of finished products. The second situation occurs when tangible personal property is purchased for use or consumption, but is later sold as an ingredient of an intentionally produced product or byproduct of manufacturing.[5] For example, Client purchases chemicals or catalysts and uses them for manufacturing purposes. When the chemicals and catalysts no longer serve the purpose for which they were purchased, they are sold as intentionally produced byproducts or used as ingredients in other products that Client sells. Under both situations, such purchases are exempt from the ROT and UT as sales for resale.

Relevant Authority

Purchases of chemicals are exempt from Illinois tax as purchases for resale when it can be shown the they become ingredients of an end product sold for wholesale or retail.[6] Furthermore, when a portion of a chemical is incorporated into a product while another portion is consumed, the portion which becomes part of the final product is exempt from sales tax.[7]

In ST 97-0006-PLR, a taxpayer inquired as to the sales and use tax determination of its catalyst purchases. In this case, nickel catalysts were used in the taxpayer's hydrogenation process by being added in pellet form to the oil, which was then heated, agitated, and pressurized with gaseous hydrogen. The catalysts then liquefy releasing their components of nickel and titre into the hot oil, allowing the unsaturated double bonds in the oils and hydrogen to combine so as to cause changes in the properties of the oil. After hydrogenation and filtration, all the titre remains with the oil that is sold and most of the nickel is removed from the oil, although a small portion remains in the oil that is sold. The removed nickel is then reused until it is eventually sold to a recycler. As a result, 100% of the purchased catalyst was either (1) included in the final product (edible oil) sold by the taxpayer; or (2) sold as an intentionally produced by-product of manufacturing to a recycler. The Department found that such catalysts qualify for the resale exemption and therefore such purchases were not subject to Illinois ROT or UT.[8]

The Illinois statutes and regulations, together with the private letter rulings, provide that chemicals and catalysts are exempt from sales tax when incorporated as an ingredient into a manufactured product or used and then sold as part of an intentionally produced byproduct. To the extent that Client uses chemicals and incorporates them into finished products, or sells the spent chemical, they will be exempt as sales for resale.

Manufacturing Machinery and Equipment Exemption

Illinois law provides that taxable sales at retail do not include manufacturing and assembling machinery and equipment used primarily in the process of manufacturing or assembling tangible personal property for wholesale or retail sale or lease.[9] 'Machinery' means major mechanical machines or major components of those machines contributing to a manufacturing or assembling process.[10] 'Equipment' includes an independent device or tool separate from machinery but essential to an integrated manufacturing or assembly process.[11]

On August 23, 2001, the definition of equipment was amended to include chermica1s or chemicals acting as catalysts but only if the chemicals or chemicals acting as catalysts effect *a direct and immediate change* upon a product being manufactured or assembled for wholesale or retail sale or lease.[12] In addition, the Illinois Regulations have included similar language since May 3, 2001.[13] The following examples from the regulation are illustrative:

> Example 1. A chemical acid is used to etch copper off the surface of a printed circuit board during the manufacturing process. The acid causes a direct and immediate change upon the product. The acid qualifies for the exemption.
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> Example 2. An aluminum oxide catalyst is used in a catalytic cracking process to refine heavy gas oil into gasoline. In this process, large

> molecules of gas oil or feed are broken into smaller molecules. After the catalyst is injected into the feed and used in the cracking process, it is drawn off and reused in subsequent manufacturing processes. The catalyst qualifies for the exemption.[14]

In the first example, the acid is acting upon the circuit board to effect a direct and immediate physical change. Thc acid replaces a process, which could be accomplished with conventional machinery, although it would be far less efficient and accurate. In the second example, the aluminum oxide is introduced to the heavy gas oil causing a physical change to the product and is recovered after the conversion is complete. As a result of the repeated use of the catalyst and the direct and physical change on the product, the aluminum oxide qualifies for the MME exemption.

Relevant Authority

In PLR 95-0207, the IDOR found that a catalyst that was an integral part of the manufacturing process and an essential device used in obtaining manufacturing objectives, which affected a direct and immediate physical change on property in a reaction chamber, and that was reused until no longer suitable for use in a manufacturing operation qualified as an exempt purchase of manufacturing equipment. The catalysts were used in the cracking reforming process of petro1eum into gasoline.

The catalysts in question were fluid cracking catalysts and aluminum oxides used in ‘catalytic cracking’ and precious metal (platinum) used in ‘catalytic reforming.’ The objective of ‘catalytic cracking’ is to refine heavy gas oil into gasoline. The objective of ‘catalytic reforming’ is to upgrade low octane naphthas into high octane blending component reformate. ‘Catalytic cracking’ involves the breaking up (cracking) of large molecules of gas oil, or feed,’ into smaller molecules. The ultimate goal is the production of gasoline. The process requires heat, pressure and the presence of a catalyst. The machinery used in this process is commonly referred to as a ‘cat cracker.’

Over a period of time, coke deposits accumulate on the catalyst used in the process above, causing a decline in catalyst activity. When this reaches a ‘critical’ stage, the catalyst must be rejuvenated. Despite rejuvenation, however, eventually the catalyst must be replaced. The period of time over which the catalyst can be and is used is measured in years.

The catalyst was essential to achieving the manufacturing objective. It operated directly on the product being manufactured, did not change in form or substance and did not become part of the final product manufactured. It was used repeatedly until normal wear and tear required them to be replaced.[15] As a result, the catalysts were considered exempt for sales and use tax purposes.

In PLR 94-0172, the IDOR found that a chemica1 making a direct and immediate change on tangible personal property to be sold at retail was considered exempt manufacturing machinery and equipment.[16] The chemical was an abrasive and performed the function that a machine would perform. It is used in the printed circuit board manufacturing industry to 'etch' copper off of the surface of the printed circuit board during manufacturing. Technically speaking, a machine could also perform this

same operation, albeit with great difficulty. This action results in a *direct and immediate change* in the printed circuit boards.

In PLR 85-0155, the IDOR determined that resins (styrene-divinylbenzene beads) used to remove undesirable products and aid in regulation of the pH process with a useful life of two to three years were exempt.[17] Final products were refined by circulating them through columns that were loaded with resin. The functional use of the resin is to remove undesired anion pieces (chloride, sulfite, sulfate, hydroxide, etc.) from high dextrose and high fructose process syrups. Because the resin makes a substantial change in the form of such syrups, they qualified for the manufacturing machinery and equipment exemption.

In PLR 82-0408, the IDOR found that ion-exchange resins qualified for the manufacturing machinery and equipment exemption. The resins are used in the manufacture of fructose. They form a separation bed in sugar separation columns. The column is used in the production flow to separate a mixture of different sugars in a water solution so that fructose and glucose may be separated from the mixture. The IDOR found that the resins were integral parts of machinery used in the manufacture of fructose and therefore qualified for the exemption.[18]

Pollution Control Facilities/Equipment Exemption

Illinois law provides an exemption for the purchase, employment, and transfer of pollution control facilities.[19] A pollution control facility, for purposes of the ROT and UT, is generally defined as:

> any system, method, construction, device or appliance appurtenant thereto sold or used or intended for the primary purpose of eliminating, preventing, or reducing air and water pollution as the term 'air pollution' or 'water pollution' is defined in the Environmental Protection Act[20] …or for the primary purpose of treating, pre-treating, modifying or disposing of any potential solid, liquid or gaseous pollutant which if released without such treatment, pretreatment, modification or disposal might be harmful, detrimental or offensive to human, plant or animal life, or to property.'[21]

An Illinois regulation provides that the exemption does not extend to:

> fuel used in operating any such equipment nor to any other tangible personal property which may be used in some way in connection with such equipment, but which is not an integral part of the equipment itself.[22]

Generally, chemicals that are a component part of an integrated process of any system, method, construction, device or appliance that is primarily intended for a pollution control purpose, will qualify under the exemption.[23] For example, limestone that was used to react with flue gas in an electrical company's pollution control facility was exempt as a chemical component in a pollution system.[24] The limestone in that case reacted with exhaust gases that contained sulfur dioxide. The sulfur dioxide mixed with the calcium carbonate in the limestone and was removed as a waste product, the resulting exhaust was free of the sulfur dioxide.[25]

Thc Illinois Appellate Court found that chemicals involved in a system used to stem the discharge of pollutants into Chicago's sewer system qualified under the pollution control exemption.[26] The system operated to eliminate pollutants through chemical reactions caused by the introduction of chemicals into tanks containing pollutant substances. The exempt chemicals used in the system included sodium hypochlorite, sodium hydroxide, hydrochloric acid, and nitric acid.[27]

The IDOR also found that chemicals used in a coal pollution control system that collected particles were exempt because they directly acted to reduce or eliminate pollutants. In that case, anti-flocculants settled the fine refuse particles in the thickener prior to being disposed of in the slurry impoundment. This chemical also had a secondary use to assist in the de-watering of the clean coal. The IDOR determined that these chemicals directly acted to reduce or eliminate pollution. They created a froth that collected the particles, and then treated the particles prior to disposal and as a result were exempt from the ROT and UT.[28]

RULING REQUEST

We hereby request a determination regarding the Illinois Retailers' Occupation Tax and Illinois Use Tax on Client's purchases of chemicals detailed in the attached appendix.

Thank you in advance for your prompt attention to this matter. Please feel free to call me if you have any questions or need any additional information.

DEPARTMENT'S RESPONSE

The manufacturing process is the production of articles of tangible personal property, whether such articles are finished products or articles for use in the process of manufacturing or assembling different articles of tangible personal property by procedures commonly regarded as manufacturing, processing, fabricating, or refining which changes some existing material or materials into a material with a different form, use or name. These changes must result from the process in question and be substantial and significant. See 86 Ill. Adm. Code 130.330(b)(2), enclosed.

Effective August 23, 2001, the definition of exempt equipment was expanded to include chemicals or chemicals acting as catalysts but only if the chemicals or chemicals acting as catalysts effect a direct and immediate change upon a product being manufactured or assembled for wholesale or retail sale or lease. This change resulted from Public Act 92-0484. Please also see subsection (c)(6) of the enclosed copy of 86 Ill. Adm. Code 130.330 for illustrative examples of chemicals that qualify for the exemption.

Many of the chemicals used by your client in its wet milling process could qualify for the exemption. The chemicals that effect a direct and immediate change upon the materials being manufactured into products for sale would qualify.

However, chemicals would not qualify for the exemption when they are not used to effect a direct and immediate change upon a material that is in the process of being manufactured for sale or lease. For example, chemicals used in a heating process may not qualify because they do not effect a direct and immediate change upon a material that is being manufactured into a product for sale or

lease. This could include chemicals that are used in another part of the plant, such as those used in the production of steam.

Your summary of the resale exemption in the context of chemicals or catalysts that become a part of the final saleable product or an intentionally produced byproduct is generally accurate. However, when items are not part of the tangible personal property when it is sold, such as cleaners or oils that are applied to products but then evaporate or are spun off in a drying process, purchase of such items are taxable for that portion that is not part of the product when sold, as such portion is "used" by the manufacturer. In these situations, purchasers can give suppliers percentage Certificates of Resale specifying that a certain portion of the sales made by such sellers to such purchasers will be made for purposes of resale.

As you are aware, the Illinois sales tax pollution control facilities exemption extends to "any system, method, construction, device or appliance appurtenant thereto sold or used or intended for the primary purpose of eliminating, preventing, or reducing air and water pollution as the term "pollution" is defined in the Environmental Protection Act (415 ILCS 5/1 et seq.), or for the primary purpose of treating, pretreating, modifying or disposing of any potential solid, liquid or gaseous pollutant which if released without such treatment, pretreatment, modification or disposal might be harmful, detrimental or offensive to human, plant or animal life, or to property."

In Wesko Plating, Inc. v. Department of Revenue 222 Ill. App. 3d (First Dist. 1991), the court stated that Section 130.335 imposed a limitation upon the statutory language not intended by the legislature, and that the synonymous terms "method" and "system" must be construed according to their ordinary and common definition of an integrated process or a whole created by the interrelationship of component parts. The court noted that chemicals were the integral components for eliminating pollutants through chemical reactions in Wesko's system. The Department follows the Wesko decision if chemicals are purchased for use as part of a method or system, and, as integral components, eliminate, prevent or reduce air or water pollution. However, it is the position of the Department that Wesko does not create a blanket exemption for any and all purchases of chemicals or supplies that will be associated with a pollution control facility.

I hope this information is helpful. The Department of Revenue maintains a Web site, which can be accessed at www.revenue.state.il.us. If you have further questions related to the Illinois sales tax laws, please contact the Department's Taxpayer Information Division at (217) 782-3336.

If you are not under audit and you wish to obtain a binding Private Letter Ruling regarding your factual situation, please submit all of the information set out in items 1 through 8 of Section 1200.110(b).

Very truly yours,

Karl W. Betz
Associate Counsel

KWB:msk
Enc.

[1] 35 ILCS 120/2.
[2] 35 ILCS 105/2.
[3] 35 ILCS 105/2, 35 ILCS 120/1.86 Ill. Adm. 130.201(a)(1)
[4] 35 ILCS 120/1
[5] Id.
[6] 86 Ill. Adm. 130.201(1). PLR No. 93-0464 (Sept. 21, 1993).
[7] *Columbia Quarry Company.* 40 Ill. 2d 47; 237 N.E. 2d 525 (II. 1968); *Mobil Oil Corporation,* 93 Ill, 2d. 126; 442 N.E. 2d 846. (Il. 1982). In the *Columbia Quarry* case, the Illinois Supreme Court held that limestone sold to a steel producer that was partially incorporated into pig iron was exempt to the extent that it was part of the finished product. The portion of the limestone that evaporated, or was consumed was not exempt, it was a taxable use of that portion of the limestone by the steel manufacturer.
[8] PLR 97-0006 (March 3, 1997).
[9] 35 ILCS 105/3-5(18); 35 ILCS 105/3-50.
[10] 35 ILCS 105/3-50(3).
[11] 35 ILCS 105/3-50(4).
[12] 35 ILCS 105/3-50(4) as amended.
[13] 86 Ill. Adm. Code 130.330(c)(6).
[14] 86 III. Adm. Code 130.330(c)(6).
[15] PLR 95-0207 (May 22, 1995).
[16] PLR 94-0172 (June 9, 1994).
[17] PLR 85-0155 (Feb. 6,1985).
[18] PLR 82-0408 (April 29, 1982).
[19] 35 ILCS 120/1a; 35 ILCS 105/2a.
[20] The EPA provides separate definitions for both air and water pollution. 415 ILCS 5.

> 'Air pollution' is the presence in the atmosphere of one or more contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment or life or property. 415 ILCS 5/3.02.
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> 'Water pollution' is such alteration or the physical, thermal, chemical, biological or radioactive properties of any waters or the State, or such discharge of any contaminant into any waters of the State, as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, fish, or other aquatic life. 415 ILCS 5/3.55.

[21] 35 ILCS 120/1a.
[22] 86 Ill. Adm. Code 130.335
[23] PLR 97-0612 (Dec. 30, 1997); 97-0554-GIL (Nov. 17, 1997); 97-0534-GIL (Nov. 12, 1997); 96-0384-GIL (Sept. 27, 1996); 96-0096 (Feb. 26, 1996); 95-0019 (January 17, 1995); 94-0240 (June 30, 1994).
[24] *Columbia Quarry Co. v. Department of Revenue,* 506 N.E. 2d 795 (Ill. App. Ct. 1987).
[25] Id.
[26] *Wesko Plating, Inc. v. State of Illinois Department of Revenue.* 584 N.E. 2d 162 (III. App. Ct. (1991).
[27] The regulatory language in place during the *Wesko* decision provided that the pollution control exemption did not apply to 'chemicals used in any [pollution control] equipment. ' The IDOR in *Wesko* attempted to subject the chemicals to tax based on this language. The court found that thc regulatory language was too restrictive and unnecessarily excluded chemicals that were part of a pollution control system and that may directly react with and improve air and water pollution. In other words, chemicals that otherwise reduce air and water pollution in accordance with the pollution control exemption can not be denied exempt status by the IDOR.
[28] PLR 93-0573 (Nov. 8, 1993).